Notes

Pressure in Gas

$P = \frac{N}{3V} * m * \langle v^2 \rangle$

P : Gas pressure
N : Number of molecules
V : Volume
m : mass of a single molecule
$\langle v^2 \rangle$: mean square velocity

full "python" formula:

$$\langle v^2 \rangle_1 = \frac{\sum_{n=0}^{N_1} v^2}{N_1}$$

$$\langle v^2 \rangle_2 = \frac{\sum_{n=0}^{N_2} v^2}{N_2}$$

$$P_1 = \frac{N_1}{V} * m_1 * \langle v^2 \rangle_1$$

$$P_2 = \frac{N_2}{V} * m_2 * \langle v^2 \rangle_2$$

$$P = P_1 + P_2$$

Volume from pressure

$$P = P_1 + P_2 = \frac{N_1}{V} * m_1 * \langle v^2 \rangle_1 + \frac{N_2}{V} * m_2 * \langle v^2 \rangle_2$$

$$P * V = N_1 * m_1 * \langle v^2 \rangle_1 + N_2 * m_2 * \langle v^2 \rangle_2$$

$$V = \frac{N_1 * m_1 * \langle v^2 \rangle_1 + N_2 * m_2 * \langle v^2 \rangle_2}{P}$$

Temperature from volume, particles and pressure

$$T = \frac{PV \cdot N_A}{N \cdot R}$$